extensive chapter on this area is most welcome. At this stage one must criticise the absence of a similar chapter on glycoproteins, which only receives 3 pages over the two volumes. A further short chapter covers the restraints imposed and problems involved in purifying proteins for sequence analysis. The impact of DNA technology on protein purification is clearly defined in an informative chapter on engineering proteins for purification.

The remainder of the book, approximately one-third, is devoted to examples of protein purifications, the examples selected giving a broad overview of the approaches and methodologies available for the purification of a range of protein types.

An extensive list of suppliers and their addresses and a comprehensive index complete the volume.

The volume is presented in the usual format for this series, basic principles being described together with detailed protocols and sections on troubleshooting. Taken together, these two volumes provide a very welcome collection that updates the reader in the majority of methodologies available for protein purification.

John M. Walker

The Analysis of Peptides and Proteins by Mass Spectrometry; Edited by C.J. McNeal; John Wiley and Sons; Chichester, 1988; 322 pages; £39.95

'The Analysis of Peptides and Proteins by Mass Spectrometry' is an edited volume, containing the proceedings of the Fourth Texas Symposium held at College Station on April 17–20, 1988. The stated objective of this symposium was to attempt to develop a dialogue between mass spectroscopists and researchers active in the life sciences. The volume consists of 25 articles concerned with mass spectrometry and its application to biological problems. The symposium took place before the importance of electrospray and of matrix-assisted laser desorption as methods of ionization was widely recognised, and neither of these methods is covered in the proceedings. Consequently, the volume viewed from the perspective of 1990 seems peculiarly deficient.

There are 9 articles on plasma desorption, 8 of which are experimental and 1 is purely theoretical. At that time, plasma desorption was the method of choice for the ionization of high-mass biological molecules (relative molecular mass (RMM) >10000), as electrospray and matrix-assisted laser desorption were still techniques in their infancies. There are 9 articles describing work in which the method of ionization was keV-atom bombardment (fast atom bombardment or liquid secondary ion mass spectrometry), and 3 articles concerning thermospray. There is one article in the volume on laser desorption and ionization. Two articles are concerned with detectors for mass spectrometers. An article entitled 'The Oxime-Based Segment Synthesis of Cro' points out ways in which mass spectrometry could be even more useful in protein chemistry, in particular emphasising the desirability of a technique for quantitation of peptide mixtures.

Many of the papers on keV-atom bombardment are concerned with tandem mass spectrometry, and that by Biemann, Costello and colleagues provides fine examples of peptide sequencing by 4-sector mass spectrometry. Hunt and colleagues describe peptide sequencing using laser-induced photodissociation of ions trapped in a Fourier transform ion cyclotron resonance (FT ICR) spectrometer. The peptide ions were brought into the cell from an external ion source via quadrupole lenses. This exciting FT ICR technique does not seem to have been developed greatly in the intervening 2 years between symposium and this review, which contrasts sharply with the very considerable growth over the same period in the use of 4-sector mass spectrometry for peptide sequencing.

The articles by Geno and Macfarlane and by Mahoney and colleagues on detectors are among the most valuable in the volume, not having 'aged' since they were presented. Both address the problems of detecting efficiently very high-mass ions which by virtue of their masses have low velocities on approaching detectors. Finally, Grotemeyer presents a succinct yet thorough coverage of laser desorption (as of April 1988) and multiphoton ionization for mass spectrometry of peptides and proteins. Indications of the approaching importance of laser desorption from matrices are given in the coverage of Tanaka and colleagues first work with fine-metal containing matrices.

Overall, the volume is recommended as a nice summary of the state of the art in biological mass spectrometry in the summer of 1988.

P.J. Derrick

Colony Stimulating Factors: Molecular and Cellular Biology; Edited by T.M. Dexter, J.M. Garland and N.G. Testa; Marcel Dekker; New York, 1990; xvi + 475 pages. $135.00 (U.S.A. and Canada), $162.00 (other countries)

The emergence of the haemopoietic colony stimulating factors (CSFs) from biological activities to recombinant proteins of enormous clinical promise is one of the most impressive achievements in modern molecular cell biology. "Colony stimulating factors; molecular and cell biology" is a multi-author survey of the field which brings together, in a single volume, reviews on diverse aspects of these remarkable agents. The book opens with a discussion of the